

RECEIVED
CENTRAL FAX CENTER

OCT 04 2005

Appl. No. 10/711,392
Amdt. dated Oct. 04, 2005
Reply to Office action of 07/05/2005

REMARKS/ARGUMENTS

Claims 1-7 were rejected under 35 U.S.C. 102(b or e), for reasons of record that can be found on pages 2-3 in the Office action identified above, which is Part of Paper No./Mail Date 20050629. To more particularly point out and distinctly claim that which

5 applicants regard as their invention, claim 1 has been amended. No new matter is introduced. Reconsideration of the amended claim 1 is politely requested.

Applicants believe that none of the prior art records teach a CMP process comprising polishing said top metal layer on said first polishing platen at a substantial constant removal rate, wherein an entire thickness of said top metal layer is polished at
10 said constant removal rate and said substrate is not removed from said first polishing platen until said barrier layer is exposed, as required by claim 1.

Puppe et al. discloses a composition for the CMP of metal and metal/dielectric structures. Puppe et al. teaches that the composition contains 7 to 100% by volume of a cationically stabilized silica sol which contains 30% by weight of SiO₂ and the SiO₂ particles of which have a mean particle size of less than 300 nm, with a pH of from 4 to 10, and less than 0.05% by weight of oxidizing agent. However, Puppe et al. teaches nothing about that the top bulk metal layer is polished in one single step by utilizing a single platen at a substantial constant removal rate until the barrier layer is exposed.

Miller et al. teaches a CMP method including the steps of removing an upper portion of copper 1150 using a first platen and copper slurry, then placing the wafer onto a softer platen (second platen) such as IC1020, then removing the remaining copper and a portion of the barrier layer 1130 in two steps using two down forces (2 psi and 1 psi), and then polishing the remaining barrier layer 1180 using the third platen and barrier slurry (see paragraphs [0064], [0065], and FIGS. 10-11). Miller et al. does not teach or expressly suggest that the top bulk metal layer is polished in one single step by utilizing a single platen at a substantial constant removal rate until the barrier layer is exposed.

Appl. No. 10/711,392
Amdt. dated Oct. 04, 2005
Reply to Office action of 07/05/2005

Hau-Riege et al. (see FIGS. 1b-1e) discloses a copper CMP method characterized in that after a recessed copper layer 105 is polished, a metal cap 107 is formed thereon. After the formation of the metal cap 107, the metal cap 107 and the barrier layer 106 are polished to form a metal capped, damascened copper line. Hau-Riege et al. does not teach that the top bulk metal layer is polished in one single step by utilizing a single platen at a substantial constant removal rate until the barrier layer is exposed.

Landers et al. teaches a CMP method. See FIGS. 2-3, the metal layer 10 and a portion of the barrier layer 12 are removed using an alumina-based slurry, then the remaining barrier layer 12 is removed using a neutral pH silica-based slurry to avoid scratching caused by the alumina-based slurry. However, Landers et al. does not teach or expressly suggest that the top bulk metal layer is polished in one single step by utilizing a single platen at a substantial constant removal rate until the barrier layer is exposed.

Accordingly, reconsideration of the amended claim 1 is politely requested. As claims 2-7 are dependent upon claim 1, they should be allowable if the amended claim 1 is allowed. Reconsideration of claims 2-7 is therefore politely requested.

Applicants believe that this case is now in condition for allowance, and a timely Notice of Allowance is respectfully requested.

From: 8064986673

To: USPTO

Page: 9/9

Date: 2005/10/4 下午 02:47:02

Appl. No. 10/711,392
Amdt. dated Oct. 04, 2005
Reply to Office action of 07/05/2005

Sincerely yours,

Winston Hsu

Date: Oct. 04, 2005

5 Winston Hsu, Patent Agent No. 41,526
P.O. BOX 506, Merrifield, VA 22116, U.S.A.
Voice Mail: 302-729-1562
Facsimile: 806-498-6673
e-mail : winstonhsu@naipo.com

10

Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C.
is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)

15